



Communicator



Join SARC
at Sea-Pac
Details Page 5

March 2012

Space Weather—The Sun
March Meeting Topic

Radio-Active
Brett Garrett VE7GM

Tech Talk
Multimeters II

Plus

Meeting Minutes

President's Report

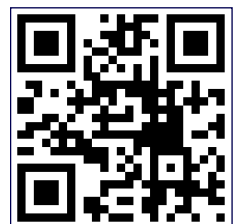
March Calendar

The Contest Contender

News You Can Lose

SEPARS Report

ve7sar.net



The Monthly Newsletter of the Surrey Amateur Radio Club



The Communicator



**SURREY
AMATEUR RADIO CLUB**

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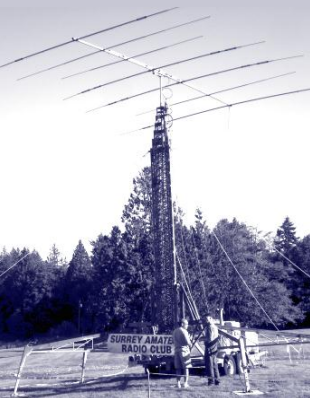
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VIA THE WEB
www.ve7sar.net

The **SARC Communicator** is published monthly for members of the Surrey Amateur Radio Club.

SARC maintains a website at www.ve7sar.net that includes club history, meetings, news and other information.



February Meeting Minutes Susan Eshelman VE7IIE—SARC Secretary

The meeting was convened at 7:00 p.m. by President John Brodie VA7XB.

INTRODUCTION & WELCOME

John VA7XB welcomed guests and new members, and an attendance list was circulated.

FINANCIAL REPORT

Treasurer Scott Hawrelak VE7HA provided a brief financial report. He reminded members that the order for SARC name badges will go in the following week. Badges can be ordered with \$10 payment. Badges will be offered again shortly, after the current class is concluded. John VA7XB noted that a small percentage of the badge cost is reserved as a club fundraiser.

REPEATER

John VA7XB gave a brief overview of the two-year process SARC has engaged in, planning and preparing for the new Repeater. The Repeater is now soon to be

installed on a 36-storey high rise in Surrey. Surrey Fire is nearing completion on their preparations for installation.

CONTESTING/OPERATOR SKILLS

John VA7XB noted that SARC members Fred Orsetti VE7IO and Jim Smith VE7FO have been very actively mentoring hams through the club's operator skills training program. Training is being conducted in a contesting environment, which allows hams to train in many facets of radio operation. Jim and Fred report that operator skills are coming up significantly, and participants have been very enthusiastic. The next upcoming contest will be announced soon [See Page 6].

FOXHUNT

This year's Foxhunt, being organized by Anton James VE7SSD, is tentatively scheduled for May 12th, pending confirmation that there are no significant conflicts with other contest events.

CLUB EXECUTIVE 2011-2012

PRESIDENT
John Brodie VA7XB

VICE PRESIDENT
Bill Gipps VE7XS

SECRETARY
Susan Eshelman VE7IIE

TREASURER
Scott Hawrelak VE7HA

DIRECTORS
Kelvin Hall VA7KPH
(SEPARS)

John Schouten VE7TI
(Communicator Editor
& Net Manager)

George Merchant
VE7QH (Repeaters)

Bill Little VA7ZBL
(Membership)

IN THIS ISSUE

click on the links below

Space Weather - The Sun
The Eleven Year Cycle

Radio-Active
Brett Garrett VE7GM

Tech Talk
Multimeters

Plus
Meeting Minutes
The Contest Contender
SEPARS Report
News You Can Lose
QRM
March Calendar
President's Report

	SEPARS Net	SARC Net
1st Tuesday	Drew VA7DRW Jay VE7OFH Standby	Drew VA7DRW
2nd Tuesday	Dixie VA7DIX Alan VA7BIT Standby	Alan VA7BIT
3rd Tuesday	Rob VE7CZV	John VA7XB
4th Tuesday	Bill VE7XS Dixie VA7DIX Standby	Anton VE7SSD
5th Tuesday	Jinty VA7JMK	Bill VE7XS
Want a turn at Net Control? Contact the Net Manager ve7ti @ separs.net		

SARC hosts an Amateur Radio net each Tuesday evening at 8 PM. Please tune in to the VE7RSC repeater at 147.360 MHz (+600 KHz) Tone=110.9, (optional Tone Squelch 110.9) also accessible on IRLP node 1980 and Echo-link node 496228. On UHF we operate a repeater on 443.775MHz (+5Mhz) Tone=110.9 Coming soon, a repeater at 224.000MHz (-1.6MHz).

There are plans to have five foxes, and different levels of Foxhunting skills, from novice to advanced, like last year. All club members will be invited to come for the social event, whether participating in the Foxhunt or not. Anton gave a brief overview of what's involved in the actual Foxhunt, inviting questions and participation.

FIELD DAY/FLEA MARKET MEETING

SARC Exec members John Brodie VA7XB, Bill Little VA7ZBL and Susan Eshelman VE7IIE recently met with LARA members Al Munnik VE7RMP and Dan Dangelmaier VA7AB to discuss plans for the upcoming Field Day and a possible Flea Market. LARA is taking the planning lead this year.

After discussion, both groups agreed that we should not have a flea market this year. Instead, a raffle could be held as part of the Langley Cruise-In, on September 15th. Approximately 50,000 people attend, and it would likely be a very successful venue for a raffle. Prizes could be arranged that have wide appeal, and there's significant potential as a club fundraiser. Don VA7AB will pursue a lottery application once approval is secured for table space at the Cruise-In.

SEA-PAC HAMFEST TRIP

John VA7XB and Susan VE7IIE discussed a proposed bus trip for SARC members to the 2012 Sea-Pac HamFest in Seaside, Oregon, June 1st-3rd. SARC Exec has been discussing organizing a bus trip, making a two-day trip to the convention at Seaside, which is the largest ham event in the Pacific Northwest. Members were asked for a general show of interest, which indicated that planning should proceed. Details will follow as available.

FEATURE PRESENTATION

John VA7XB introduced the evening's technical presenter, Alex Schwarz VE7DXW. Alex gave an excellent presentation on the MDSR Project, a mod/demod software defined radio application and hardware kit. Presentation materials will be made available on the SARC website, VE7SAR.net.

Following the 50/50 draw, the meeting was adjourned at 9:00 p.m. The next meeting will be held on March 14th, 2012.

Find the Hidden Message

We have a prize for the SARC member who finds the hidden CW message in this edition of the Communicator. If you are able to spot it, send your answer to ve7ti@separs.net before March 10th.

The winner will be announced at the SARC March 14th General Meeting.

Next SARC Meeting

Wednesday, March 14, 2012

The next meeting of the Surrey Amateur Radio Club will feature 'Weather - The Sun'. Hope to see you there! See the feature article on page 4.

DOWN THE LOG...

SARC Monthly Meetings

2nd Wednesday (Sept-Jun)
1900 hrs local at the Emergency Management BC PREOC,
14275 96th Avenue, Surrey, BC

Weekly Club Breakfast

Friday at 0830 local
ABC Country Restaurant at
600 - 7380 King George Blvd.
Surrey

SARC Net

Tuesday at 2000 hrs local
on 147.360 MHz (+) Tone=110.9

SEPARS Net

Tuesday at 19:30 hrs local
on 147.360 MHz (+) Tone=110.9

Announcements & News

SEPARS Monthly Workshop
Third Thursday, 1900-2130 local
Rm. 214, 13569 - 76th Avenue,
Surrey.

SEPARS Training

Fourth Saturday, 0830 local,
Firehall #1, 88 & 132nd Street,
Surrey

On the Web ve7sar.net

Between newsletters, watch your e-mail for announcements of events, monthly meetings and training opportunities. These announcements may also be found on our web page.

Twitter
[@ve7sar](https://twitter.com/ve7sar)

Space Weather—The Sun

11 Years Is A Long Time To Wait For Good Weather

The solar cycle (or solar magnetic activity cycle) has a period of about 11 years. The cycle is observed by counting the frequency and placement of sunspots visible on the Sun. Solar variation causes changes in space weather and to some degree weather and climate on Earth. It causes a periodic change in the amount of irradiation from the Sun that is experienced on Earth.

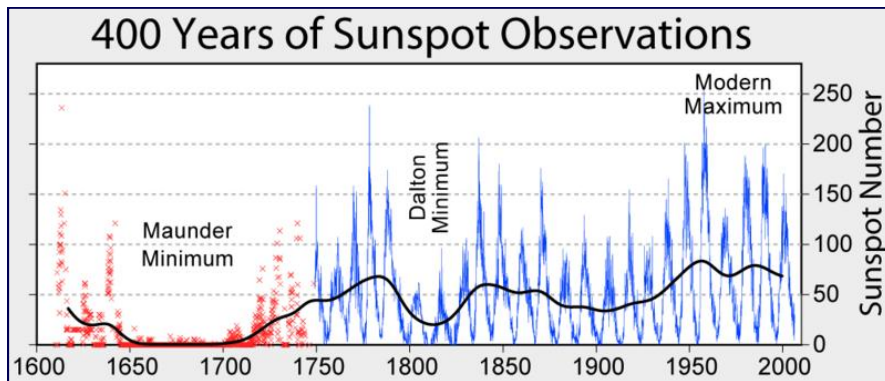
The solar cycle was discovered in 1843 by Samuel Heinrich Schwabe, who after 17 years of observations noticed a

periodic variation in the average number of sunspots seen from year to year on the solar disk. Rudolf Wolf compiled and studied these and other observations, reconstructing the cycle back to 1745, eventually pushing these reconstructions to the earliest observations of sunspots by Galileo and contemporaries in the early seventeenth century. Starting with Wolf, solar astronomers have found it useful to define a standard sunspot number index, which continues to be used today.

Until recently it was thought that there were 28 cycles in the 309 years between 1699 and 2008, giving an average length of 11.04 years, but recent research has showed that the longest of these (1784-99) seems actually to have been two cycles, so that the average length is only around 10.66 years. Cycles as short as 9 years and as long as 14 years have been observed, and in the double cycle of 1784-99 one of the two component cycles had to be less than 8 years in length. Significant variations in amplitude also occur. Solar maximum and solar minimum refer respectively to epochs of maximum and minimum sunspot counts. Individual sunspot cycles are partitioned from one minimum to the next.

The physical basis of the solar cycle was described in the early twentieth century by George Ellery Hale and collaborators, who in 1908 showed that sunspots were strongly magnetized (this was the first detection of magnetic fields outside the Earth), and in 1919 went on to show that the magnetic polarity of sunspot pairs:

- Is always the same in a given solar hemisphere throughout a given sunspot cycle;
- Is opposite across hemispheres throughout a cycle;
- Reverses itself in both hemispheres from one sunspot cycle to the next.



Hale's observations revealed that the solar cycle is a magnetic cycle with an average duration of 22 years. However, because very nearly all manifestations of the solar cycle are insensitive to magnetic polarity, it remains common usage to speak of the "11-year solar cycle".

Solar Radio Flux

Emission from the Sun at radio wavelength is due primarily to coronal plasma trapped in the magnetic fields overlying active regions. The F10.7 index is a measure of the solar radio flux per unit frequency at a wavelength of 10.7 cm, near the peak of the observed solar radio emission. F10.7 is often expressed in SFU or solar flux units. It represents a measure of diffuse, nonradiative heating of the coronal plasma trapped by magnetic fields over active regions, and is an excellent indicator of overall solar activity levels. The solar F10.7 cm record extends back to 1947, and is the longest direct record of solar activity available, other than sunspot-related quantities.

Sunspot activity has a major effect on long distance radio communications particularly on the shortwave

(Continued on page 5)

SEA-PAC 2012 BUS TRIP

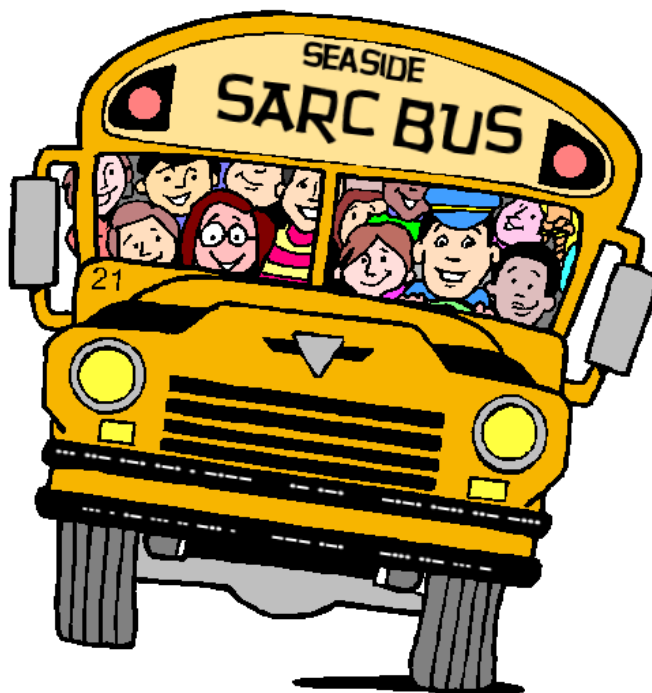
The SARC Executive is exploring the possibility of organizing a bus trip to this year's [SEA-PAC HamFest](#), in Seaside, Oregon. This year marks the 30th Annual SEA-PAC convention, which is the largest ham event in the Pacific Northwest.

The proposed bus trip will be a great two-day holiday for ham enthusiasts, family members and friends. We'll be transported by luxury coach to one of the most beautiful oceanside spots in the Northwest. Traveling as a group will not only make the trip very affordable, it will give us a great opportunity to relax and socialize.

Sea-Pac offers a full slate of events, from seminars to the famous Flea Market. Visit their website for details: www.seapac.org. While hams are attending seminars, swap meet, etc., family members (children invited) can enjoy a coach tour of local sights in nearby Astoria, Cannon Beach, etc.

Itinerary details are still in the works, but the proposed trip would be Friday and Saturday, June 1st and 2nd, 2012. Sea-Pac has arranged hotel discounts, and SARC is working on a 'best trip' package that we hope will offer discounts on nearly all aspects of the trip.

The Seaside HamFest trip will also serve as a club fundraiser. SARC members will be offered earlybird discounts for prompt registration, with details to be announced at the March 14th meeting and by email. So mark your calendar for a well deserved weekend off



June 1st and 2nd, and head to the beautiful Oregon coast for Sea-Pac 2012!

To help us with planning, we'd appreciate an early show of interest in the trip. Please let us know by phone or email if you might be interesting in joining us: Susan Eshelman VE7IIE semantiks@gmail.com or John Brodie VA7XB brodiejb@shaw.ca.

(Continued from page 4)

bands although medium wave and low VHF frequencies are also affected. High levels of sunspot activity lead to improved signal propagation on higher frequency bands, although they also increase the levels of solar noise and ionospheric disturbances. These effects are caused by impact of the increased level of solar radiation on the ionosphere. It is accepted that 10.7 cm solar flux can interfere with point-to-point terrestrial communications.

Skywave

Skywave modes of radio communication operate by bending (refracting) radio waves (electromagnetic radiation) through the ionosphere. During the "peaks" of the solar cycle, the ionosphere becomes increasingly ionized by solar photons and cosmic rays. This affects the path (propagation) of the radio wave in complex ways which can both facilitate or hinder local and long distance communications. Forecasting of skywave modes is of considerable interest to commercial marine and aircraft communications, [amateur radio operators](#),

and shortwave broadcasters. These users utilize frequencies within the High Frequency or 'HF' radio spectrum which are most affected by these solar and ionospheric variances. Changes in solar output affect the maximum usable frequency, a limit on the highest frequency usable for communications.

Our March Meeting Presenter

John White VA7JW will present two PowerPoint presentations, one in March the other in April. The first is entitled Space Weather - The Sun, and the second is entitled Space Weather - The Solar Indices.

The Sun explains the basis of the 11 year cycle and the various activities on the sun associated with that cycle. The Solar Indices explains the effect of the sun's activity on the ionosphere. John will talk about the types of storms that occur in the ionosphere, what the and K index are and what they mean.

All this information is useful in understanding why and how the ionosphere gets disturbed, which helps explain the variations and uncertainties in HF propagation.



The Contest Contender

Fred Orsetti VE7IO & Jim Smith VE7FO

On The Air Operator Training (Contesting)

The ARRL DX CW contest was the 7th contest our training group have participated in including RTTY, SSB and CW events. For the ARRL DX CW (the 7th) contest we had Jay, VE7OFH, Brett, VE7GM, John VA7XB, Jim, VE7FO, Fred, VE7IO and a new arrival to Canada Mike RW0CN who now holds the Canadian call VE7ACN. Mike was welcomed into the training group and quickly became a very active participant. Mike, of course, is a skilled contester and an extremely good CW operator which immediately raised the bar for contesting at VE7IO. We are very fortunate to have an operator with his background who is willing to share and help our group. Mike arrived for the contest at 0700 on Saturday morning and stayed through the night until we ended the contest at 1600 on Sunday.

Jim, VE7FO, continues to provide excellent training material as well as offering his experience to our training program. He has been the shaker and mover behind the expansion of the station here at VE7IO and because of the changes we have made we are now operating two stations. But even more importantly Jim has got us using propagation information from Hamcap, DX Atlas and Ionoprobe to help us determine what bands are open and when. We have 3 computers set up in the shack two running the radios and the third providing propagation information. Note, sometimes a fourth computer is logged onto the network to give us additional information. All of the above has improved our score and provided the operators with important information making them feel more a part of the contest.

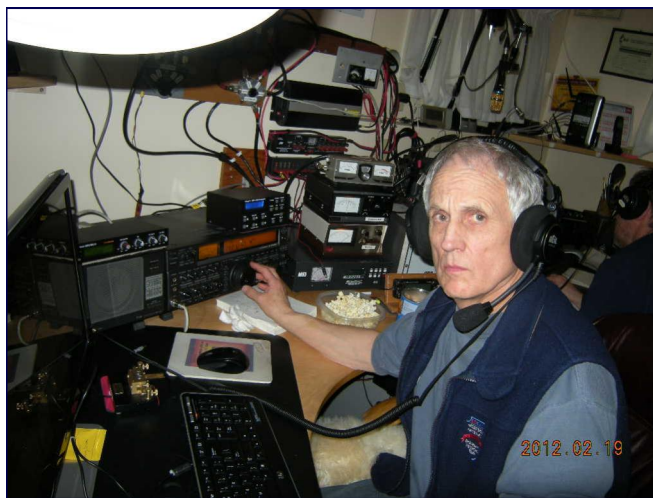
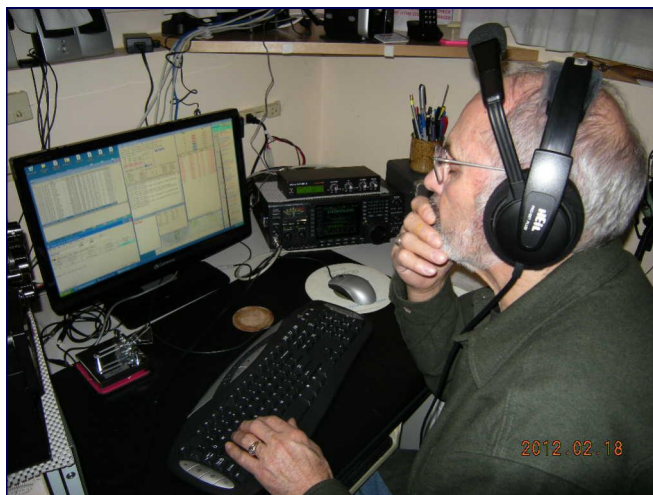
Operator progress can be measured in a few ways, are they comfortable in the running mode, are their running rates improving, do they go home and operate their own station in the contest and of course are they now more comfortable with the logging program N1MM? If we look at the current group of trainees we would have to give them excellent marks for significant progress in all of these measurements.

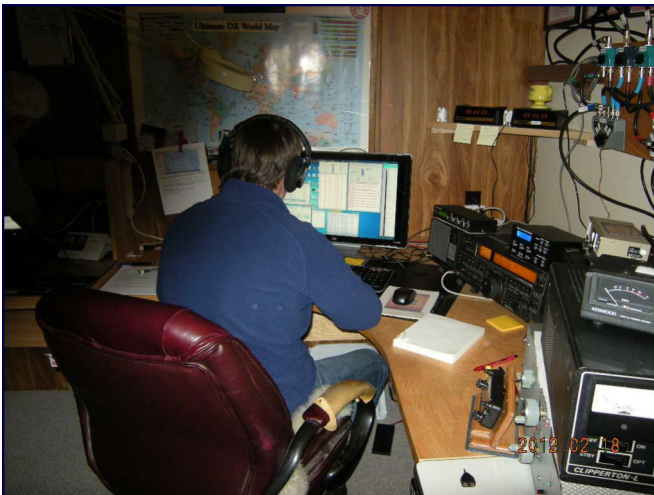
We are expanding our training group by two starting with the ARRL DX SSB contest and will be expanding again in the very near future so if you would like to be involved you should contact John Brodie, Jim Smith or myself.

Will this project improve our Field Day score? I will leave the answer up to you but only say we have some pretty good operators in training and having VE7ACN on board won't hurt either.

On a personal note I have enjoyed this project immensely at VE7IO. Seeing the operators grow to enjoy contesting and develop their on the air skills will be something I will remember for many years to come.

~ Fred VE7IO





BC QSO Party

On Saturday Feb. 4th a few members of SARC participated in the 2012 BC QSO Party sponsored by the Orca DX and Contest Club. Our efforts took place at the "Project" in Langley, courtesy of station host and owner Bill VE7XS. Using the callsign VE7JR and led by Jeff Franchuk, the team made just under 900 contacts over the course of 12 hours.

Participating from SARC were Rob VE7CZV, Heinz VA7AQ and John VA7XB. Special guest operator was Mike Zavarukhin RW0CN (now VE7ACN) an avid contester from Russia and recent business owner moving to the Vancouver area. Many thanks to Bill for welcoming us to his superb station!

-VA7XB





Radio-Active Susan Eshelman VE7IIE

Brett Garrett VE7GM

Today we'd like to introduce a new club member... but not a new ham. Brett Garrett VE7GM joined SARC in the Fall of 2011, having recently returned to the hobby. Brett first got his ham license around 1967, and enjoyed doing a little youthful operating before life got in the way. Having now refreshed his VE7GM - Basic with Honours, Morse and Advanced - SARC is pleased to have this long-time ham join the club.

Brett first became intrigued with ham radio as a sixth grader. His interest in electronics began when his father bought him a radio kit. A school administrator discovered his intense interest in electronics, and suggested to his mother that perhaps he should consider getting a ham license. Brett soon began attending ham classes run by the Vancouver Club in a member's basement, and succeeded in getting his license.

'Back in the day' when VE7GM got licensed, Morse code was a requirement for a Basic license, and operators had to show proficiency at 10 w.p.m. After assembling some equipment, Brett began operating HF on 80 and 40 meters using code.

Today, VE7GM looks forward to refreshing his CW skills, advancing from a current 15 to his target of a solid 30 w.p.m. Towards that end, Brett has been actively involved in the SARC Contesting/Operating Skills training program being led by Fred Orsetti VE7IO and Jim Smith VE7FO. Describing the experience as 'just terrific', Brett reports that he's learning a great deal, and having lots of fun. For the recent BC QSO Party, he operated from his home station, which he'd just gotten operational the day before. Admitting that he's not much of a 'rag chewer', Brett finds the contest environment to be an enjoyable and satisfying operating environment.

Living in the Crescent Beach area, with somewhat limited antenna space, Brett is currently operating an IC-7000 on a 20 meter dipole that's about 4.5 meters high. He plans to add a vertical... as soon as he scratches out the right configuration of radials for the space. Meanwhile, currently active as a member of both SARC and SEPARS, local hams will have an opportunity to meet VE7GM on the weekly SARC/SEPAR nets.

In fact, it was Brett's interest on the emergency communications side of Amateur Radio that recently sparked his renewed interest in the hobby. Having taken early retirement from his career as a Power Systems engineer for BC Hydro, Brett became more concerned with community level emergency preparedness after the recent Japan quake and tsunami. He then ran into Kelvin Hall VA7KPH at a local swap meet, he decided to get back into the hobby, and get involved. You'll now find him attending most SARC/SEPAR meetings and workshops, and soon to be assisting with some of the SEPAR demos and training sessions organized by Marcy Lui VE7JT.



Overall, Brett says he's very happy to have gotten active in the local Amateur Radio community, and is grateful that hams who have so much capability and knowledge are so generous in sharing their time and experience. Having seasoned operators willing to sit down and really help you makes all the difference. For VE7GM, the club experience and the high caliber people who are there to help, has been a recipe for enthusiasm and inspiration that pushes him to go further and try harder.



SEPARS Report Kelvin Hall VA7KPH

SEPARS is gearing up for an exciting year with a number of new projects

The 2012-01-19 meeting featured a presentation on why Amateur Radio and specifically SEPARS is a major resource for catastrophic events.

One of the topics in the presentation featured the lessons learned from the New Zealand earthquake. The "Kiwis" found that storing just 3 days of food and water for emergencies was inadequate. Moreover, they found that personal preparedness among first responders is crucial. Once again kudos to Marcy for her information on the emergency food packs from Costco.

On 2012-01-28 SEPARS exercised with the "Grab N Go Kits" at fire hall #10. We all learned a lot and I came away with about 3 pages of notes. Members are reminded that the kits are quite heavy and moving these things requires a team effort. In addition the portable batteries require recharging before they can be deployed at a scene.

During the 2012-02-02 Executive Meeting we discussed a number of new projects including:

- The new SEPAR trailer
- The acquisition of new equipment from Burnaby Radio
- The organization of Teams within SEPAR for multiple projects
- Business Case proposals for projects that SEPAR members may want to lead
- The new SEPAR Monthly Briefing format
- Using the D Star format as another option during an emergency
- The 2012 gaming grant proposal and ideas for projects - note deadline for suggestions to the executive is May 31st
- The acquisition of older amateur radios from the schools. The ESS used a number of schools in the past for reception centres. Some of these schools had amateur radios installed. Since ESS has moved the reception centres to the Surrey Recreation Centres, SEPARS now received permission from ESS and the Surrey Emergency Program to move the radios as "grab n go kits" to the 5 district RCMP sub-offices. These "grab n go kits" will remain SEPARS property. This project will enable SEPARS members to sign out the

radios from the local district offices. It provides an ongoing maintenance program for the radios and it may become a vital link between the district offices and the EOC's. I'm also hoping that it will provide more interaction between the SEPARS operators and the RCMP members. Everything in emergency planning depends on relationships.

- The production of SEPARS identity cards. If the radios are available for "sign-out" at the district offices, the SEPARS members will require SEPARS ID cards. We're working on the details. I understand that everyone has provincial cards.

On 2012-02-22 SEPARS will be visiting the Coquitlam Amateur Radio Club with a presentation on personal preparedness.

SEPAR Events Calendar

<http://www.separs.net> - Left click on the SEPAR banner

- March 15, 2012 Thursday evening workshop
- March 20, 2012 Tuesday - Surrey Museum workshop - Contact Marcy Lui or Fred Orsetti for more information
- March 24, 2012 Saturday workshop
- April 19, 2012 Thursday evening workshop
- April 28, 2012 Saturday workshop
- May 5, 2012 Saturday - Guilford Library workshop - Contact Marcy Lui or Fred Orsetti for more information

Kids can discover amateur radio at the Surrey Museum

On Tuesday, March 20 from 2-4 p.m., join the Surrey Museum and the Surrey Emergency Program Amateur Radio Society (SEPAR) in an amateur radio emergency communications workshop for kids. The workshop will focus on how amateur radio provides communities with emergency communications when commercial systems are not operational. The workshop will provide kids with a hands-on experience of how amateur radio systems work and the technology used.

Read the full story at

<http://www.surreyleader.com/community/140363773.html>



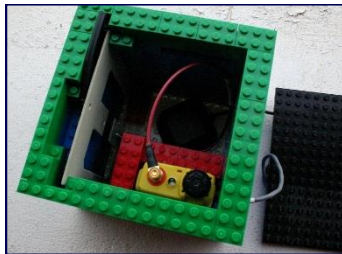
News You Can Lose The Lighter Side of Amateur Radio

A Lego Enclosure for an APRS Tracker with a Built-In Antenna



Sivan Toledo is an Israeli Ham with a novel approach to building enclosures for his projects (including one made from papier maché). He writes on his blog that his APRS tracker seems to work quite well, but it was difficult to use

with various pieces of equipment sloshing about on the dashboard: "Initially, I've been using the short vertical antenna that came with the UV-3R radio. Both the radio/antenna and the GPS antenna were placed on the dashboard. This antenna did not work well inside the car, especially when it was lying horizontally with the radio on the dashboard. Then I switched to the small PCB magnetic loop antenna I built a while ago. This worked much better, especially when the antenna was standing up. But now I had three pieces of equipment (the radio, the loop antenna, and the GPS antenna) sloshing on the dashboard. I was considering how to mount the antenna and the radio more securely on the dashboard. I didn't feel like spending a lot of effort on building an enclosure. Then the idea of building the enclosure, or at least a prototype, from Lego".



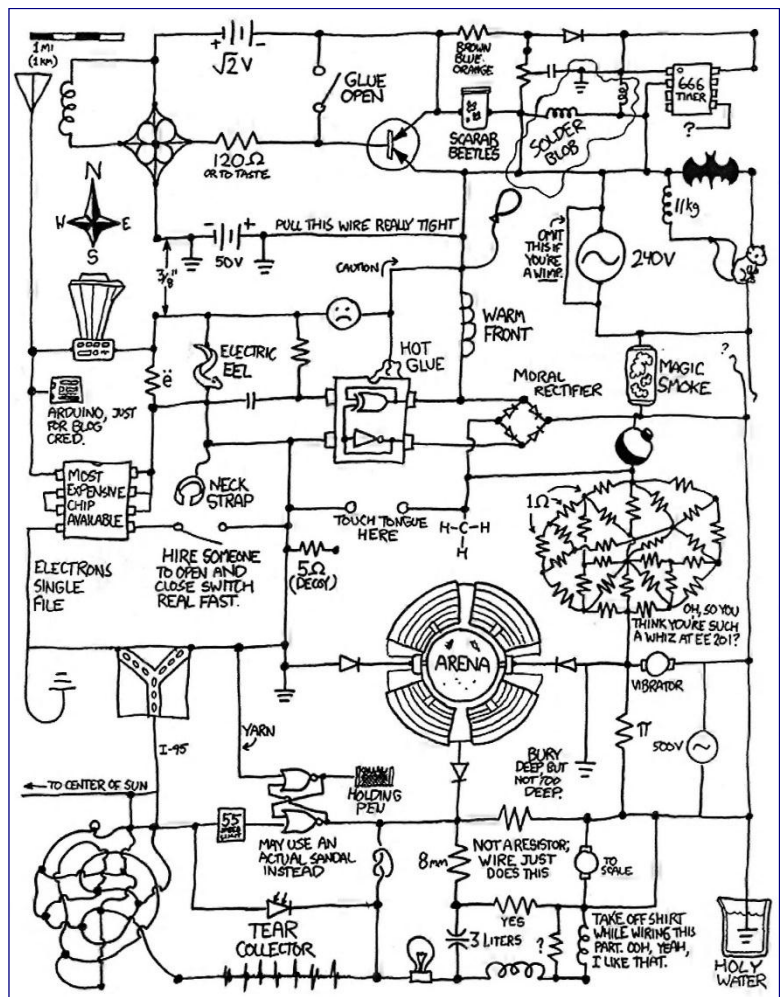
The box you see in the pictures above is the result. Apparently it works very well as it's a bit heavy, so it doesn't move at all on the dashboard. It contains the antenna, the radio, and the GPS antenna. There are holes in the box for the audio cable to the microcontroller, for the GPS antenna cable, and for the display and buttons of the radio. Being able to turn the radio on and off is important, since it runs on its internal battery. The hole on the side is also large enough for the radio's charging cable. The antenna and radio slide into specially-built compartments that hold them securely. It's also easy to slide them out. Both antennas work well inside the plastic box on the dashboard (Lego bricks are usually made of ABS plastic).

The box you see in the pictures above is the result. Apparently it works very well as it's a bit heavy, so it doesn't move at all on the dashboard. It contains the antenna, the radio, and the GPS antenna. There are holes in the box for the audio cable to the microcontroller, for the GPS antenna cable, and for the display and buttons of the radio. Being able to turn the radio on and off is important, since it runs on its internal battery. The hole on the side is also large enough for the radio's charging cable. The antenna and radio slide into specially-built compartments that hold them securely. It's also easy to slide them out. Both antennas work well inside the plastic box on the dashboard (Lego bricks are usually made of ABS plastic).

Parachute Mobile at Radiofest 2012, Monterey CA

Parachute Mobile www.parachutemobile.org will be operating in conjunction with Radiofest 2012 next Saturday March 3, 2012. Radiofest 2012 is the ARRL Santa Clara Valley Section Convention. Current plans are for simplex voice comms on 146.430 MHz. Live ATV video will be broadcast from a jumper-cam and relayed to a display at RADIOFEST.

Jumper 1, Mark Meltzer AF6IM and Jumper 2, Michael Gregg KF6WRW, will be exiting at 15,000 ft over the old Ft Ord Army airfield (Marina Airport) which will give the jumpers a line of sight to the RADIOFEST QTH. Our team coordinator Rob Fenn KC6TYD has completed his freefall training and will be jumping too. This will be our team's tenth Parachute Mobile mission. Join the fun. All you need is an HT set for our comm frequency. Jumper 1 and Jumper 2 will be fitted with APRS that will transmit their location and altitude as well as biotelemetry data including SpO2 (blood oxygen saturation) and heart rate. Look for AF6IM for Jumper 1 and KF6WRW for Jumper 2 on your favorite APRS web site such as www.aprs.fi No SSID required.



A SARC "Project of the Month"



Tech Talk John Schouten VE7TI

Using Multimeters—Part 2

Last month we looked at multimeter types. Multimeters have the ability to measure voltage, current and resistance and more expensive models may add other functions such as temperature. A basic addition to your household tool kit, there are low cost multimeters available, frequently on sale for less than \$10. I'd suggest purchasing a digital rather than analog model as a digital meter is easier to use and will suffice for basic measurements.

Digital models are generally "auto-ranging", a useful feature because you don't need to change the dial to measure different levels. If you think you might be using it in low light, consider getting one with a "back-light."

The first rule for getting the most out of your multimeter is to read the manual. The manual will have instructions for basic operation of the instrument and safety information about potential dangers. Once you have read the manual, added the batteries, and attached the probes (the wires, which are usually red and black), try some of the example measurements below.

Basic Multimeter Tests

Resistance Test

Set the multimeter to read "resistance." Check that the two probes are inserted in the right holes.

What does the readout say when the probes are not touching anything? When the two probes are separated, there is an infinite resistance separating them, since air does not conduct electricity. Make a mental note of your multimeter's readout for infinite resistance, because it varies with the manufacturer.

Touch the two probes together. Now what does the readout say? When you touch the two probes together, the resistance is close to zero. The metal tips are excellent conductors and the wires offer little resistance to current flow.

Try this... I first did this as a science fair project. Set the knob to the highest Resistance scale on the meter. Dampen two fingers and press one probe to each fingertip. Do you get a reading? With dry fingers you probably won't get a reading. Dry skin has a resistance of

about 1 million ohms, whereas the resistance of moist skin is reduced by a factor of ten or more.

Try it with different liquids including salt water. Did the resistance change? What you are seeing is a Polygraph (lie detector) in its simplest form. As the subject

is stressed from telling an untruth, the body produces perspiration which changes the skin's resistance

[scientifically known as Galvanic Skin Response]. Also measured in a professional instrument are blood pressure, pulse and respiration. Once calibrated, a polygraph and trained operator can record and interpret the readings to determine when the subject is truthful or not. For more experimentation check Google or have a look [here](#) for a basic kit.



Measure the resistance of some resistors that are not attached to a circuit. For example, test resistors of 100 Ω (ohms), 10,000 Ω , and 1 M Ω (megaohm, or 1 million ohms). You can buy these online or at a [local supplier](#). Touch the probes to the wires on either side of the central cylinder. Watch the units: a "k" means kilo-ohms (thousands of ohms), and an "M" means megaohms.

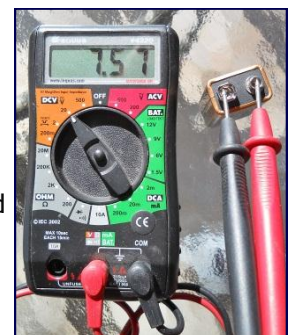
Never measure resistance in a circuit when power is applied. You must also discharge capacitors in a circuit before measuring resistance, because if there is any source of current other than the multimeter itself, you will get erroneous readings.

Voltage Test

Touch the probes to the terminal ends of a 9-V battery [see photo].

You should get a reading of approximately 9 Volts. This one reads 7.57V so is obviously spent.

The battery has a positive [red] and a negative [black] pole. Note that your multimeter also has a positive and a negative probe. If you attach the positive probe to the negative side of the battery, it will still read voltage, but it will have a negative sign in front of it.



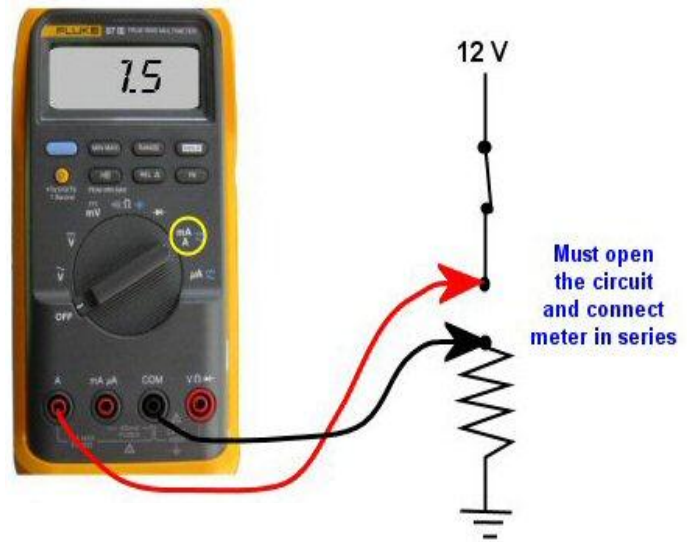
Current Test

This is probably the trickiest reading to make and one that can damage the meter should you pass too much current through it. Set the multimeter to read "direct current (DC)." Important: Check your multimeter to see where the probe should be plugged in so it reads "current."

In order to measure current, you have to open up the circuit and attach the leads from the multimeter so that the current flows through the multimeter in series. To do this, use jumper wires and wires with alligator clips to add the multimeter to the circuit, as shown.

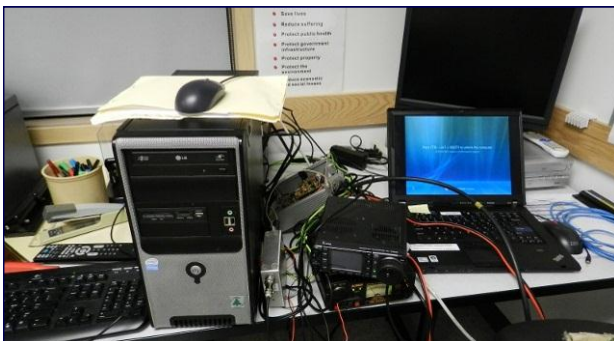
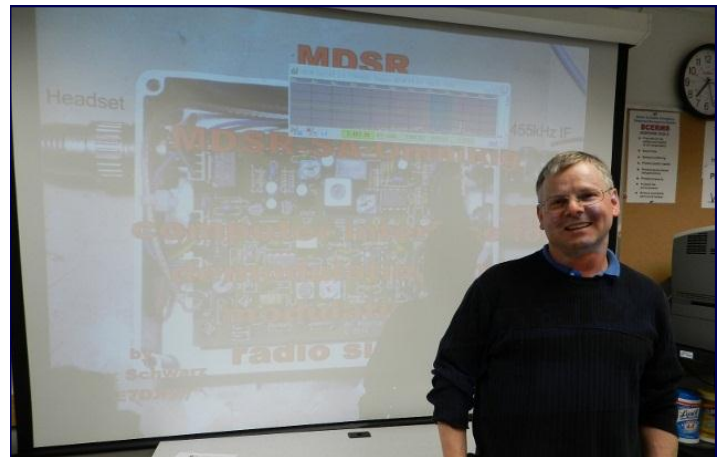
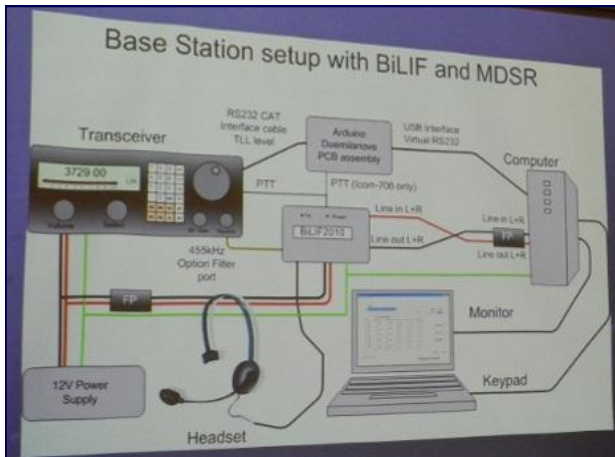
The current now flows from the 12 volt source through the switch, resistor and the multimeter because it is part of the circuit. Because it is connected in series, the meter can be inserted at any point in the circuit shown and show the same reading.

Don't be shy to experiment with your multimeter. You will likely find a multitude of uses for it around the house.



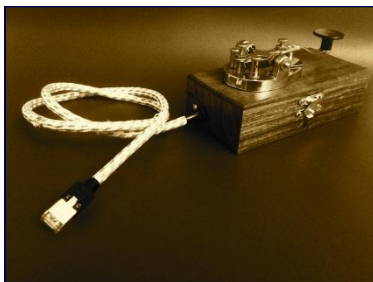
At The February Meeting

Alex Schwarz VE7DXW gave an excellent presentation on the MDSR Project, a mod/demod software defined radio application and hardware kit. Presentation materials will be made available on the SARC website, VE7SAR.net.



'Net' Working Internet Resources and Tidbits for Hams

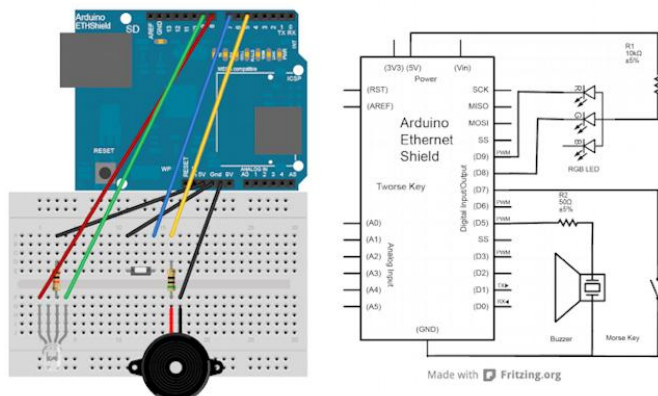
Tworse



In the interests of interface archaeology, we have the [Trowse Key](#), a telegraph key that posts to Twitter using Morse code. It's an interesting build that nearly looks like something out of the 1900s.

We've seen a ton of [Morse keyboards](#) over the years, but never one so well-engineered for a single purpose. The Tworse Key automatically posts all the [Morse messages](#) to Twitter.

This isn't meant to be used as an everyday input device, though. It's more of an exercise in interface archaeology. That being said, an [iambic key](#) would be a far more [ergonomic solution](#). Check out the [video of the Tworse Key](#) and the circuit below.



Belgium Amateurs Embrace Social Media

On February 4, 2012 the Board of Directors of the National Amateur Radio Society of Belgium, the UBA, took the decision to embrace social media.

The UBA says that social media is becoming an indispensable tool in the toolbox of any organization that wants to communicate with its target groups, namely the members and those interested in our hobby. You can find the UBA on [Facebook](#) on [Twitter](#) and on [YouTube](#). Their website is at <http://tinyurl.com/BelgiumUBA>. Talk about being well connected!

100 years since the Titanic

On April 15, 2012 it will be exactly 100 years since the **Titanic** collided with an iceberg and sank.

As radio amateurs we pay special tribute to wireless operator **Jack Philips** who acquitted himself of his task until the very last gasp and continued broadcasting the distress signal "CQD" (predecessor of SOS) as long as he could.



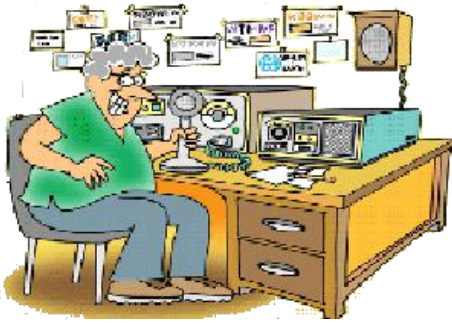
Flemish amateur radio operators will honour him by putting special callsigns on the air from April 1, 2012.

Come and Join Us On the Airwaves by The Ham Band

Andrew John Huddleston G3WZZ/OZ1XJ/OZ5E and Lissa Ladefoged of the Ham Band have released a high-definition version of their popular music video 'Join Us in the Airwaves'.



If you haven't seen it yet it's a fun look at Amateur Radio, if you have, this new HD version is even better. Watch [Join Us in the Airwaves](#) by The Ham Band.



QRM ...from the Editor's shack

*Do you have a photo or bit of club news to share?
Something to sell or something you are looking for?
Email it to ve7ti@separs.net for inclusion in this column.*

Back at my 'usual' desk...

Some of you regular participants in the Surrey Club net know that I have been checking in from Palm Springs, CA via Echolink lately. We made the trek back north and I'm now happily back in my shack with a long list of projects to complete. After a couple of days to acclimatize to the (much) cooler weather, I will venture outside to complete some work on my antennas and the tower, including adding another 10-foot section.

Echolink has been a wonderful method to stay in touch with club members and others. I occasionally forget that I have it on and have suddenly been startled by someone coming on from a remote part of the world for a QSO. I have spoken to every continent—something I cannot yet claim for 'real' Ham radio. I've used it from several locations both with my laptop and iPod Touch. Provided there is a reasonably fast Internet connection it works just fine, as a matter of fact, I get great signal reports and folks ask what radio I'm using. Still, it isn't the same challenge 'real' Ham radio provides.

The RV Resort in Palm Springs doesn't permit significant antennas so everything has to be kept low profile. For that reason I invested in a Hi-Q 5/80 for HF last year. It's mounted in the back of my pickup on a satellite stand and I manage to reel out a few metres of counterpoise. QSOs are possible with much of the Western US, occasionally beyond, and I can sometimes catch the BC Public Service Net but, frustratingly, a check-in there has not been possible.

I managed to hide a dual band TV twin-lead J-pole inside a metre-long flagpole made from ¾ inch PVC water pipe, and it does an admirable job with repeaters up to about 80km away.

So, back home I note with satisfaction that the 30 ft tower is still standing straight, despite some fierce winds while we were away. It took considerable effort and some welding help from Fred VE7IO to get it solid, the rust off and a fresh coat of paint on. The experience was quite satisfying. If the paint stays on I plan to write an article about refurbishing a rusty old tower. There are plenty around and some are free or at least reasonably priced.

The current project is to resurrect an older 3 band HF Yagi and a rotator. Both were in sad shape, especially the rotator which was rusted solid. The ball bearings, 100 of them, looked more like rabbit droppings but I was able to replace them with shiny new ones from eBay for about \$7 shipped. With any luck both will be up by summer.

SEA-PAC HamFest, Seaside, OR

This year is the 30th Anniversary of the ARRL Northwestern Division Convention in Seaside, Oregon. Since 1982, the Oregon Tualatin Valley Amateur Radio Club has provided its leadership with assistance from other area clubs which includes the Clark County Amateur Radio Club, Hoodview Amateur Radio Club and the Sunset Empire Amateur Radio Club.

I've been to this event several times and always come away with goodies, especially attractive since there is no sales tax in Oregon. Your duty free allowance for a 48-hour stay is \$400. As always, they have a large number of [new equipment dealers](#) and [flea market tables](#).

On Saturday evening there is a large [dinner banquet](#) with a guest speaker held at the Seaside Convention Center. This year, in honor of their 30th anniversary, SEA-PAC welcomes NASA Astronaut Dr. Michael Reed Barratt (KD5MIJ) as the [banquet speaker](#).

SEA-PAC will offer free [seminars on Saturday](#), and this year will also feature a [Friday workshop](#) on Software Defined Radio presented by SEA-PAC and T.A.P.R.

The Surrey Amateur Radio Club is planning luxury tour bus transportation to the venue (no... not a school bus), provided there is adequate interest [[see the article on Page 5](#)]. Further details will be discussed at the March 14th General Meeting.





RAC News Radio Amateurs of Canada

The Amateur Radio Service Gains A Band Near 500 kHz

[Note: Subject to approval by Industry Canada, operation on this band is not permitted in Canada at this time. Radio Amateurs of Canada will be working with Industry Canada through the Radio Advisory Board of Canada (RABC) to work out the various details on amateur usage of this band in Canada.]

The worldwide amateur radio service has a new frequency band, 472 to 479 kHz. It is a secondary allocation. There are other services in that portion of the spectrum that must not be interfered with by the amateur operation.

The aeronautical radionavigation service is a primary service in the band 415-495 kHz in the following areas: Australia, China, the French overseas communities of Region 3, Korea (Rep. of), India, Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea and Sri Lanka.

The aeronautical radionavigation service is a primary service in the band 435-495 kHz in the following areas: Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Latvia, Uzbekistan and Kyrgyzstan.

The amateurs are allowed to use the band so long as it does not cause interference to this primary service or the maritime mobile service operating in the 472-479 kHz band. There are some countries that will not allow amateur radio operation in the 472-479 kHz band. The use of the frequency band 472-479 kHz in Algeria, Saudi Arabia, Azerbaijan, Bahrain, Belarus, China, Comoros, Djibouti, Egypt, United Arab Emirates, the Russian Federation, Iraq, Jordan, Kazakhstan, Kuwait, Lebanon, Libya, Mauritania, Oman, Uzbekistan, Qatar, Syrian Arab Republic, Kyrgyzstan, Somalia, Sudan, Tunisia and Yemen is limited to the maritime mobile and aeronautical radionavigation services. The amateur service shall not be used in the above-mentioned countries in this frequency band, and this should be taken into account by the countries authorizing such use.

The ITU Radio Regulations provide that radio amateurs are limited to 1 watt (e.i.r.p.) however administrations whose territory is beyond 800 kilometers from the borders of the following countries may increase the operating power to 5 watts (e.i.r.p.). yrgyzstan, Somalia, Sudan, Tunisia, Ukraine and Yemen.

The change becomes effective with the adoption of the Final Acts of the Conference. Of course, it will be determined by each administration around the world as to

what modes and bandwidths will be used in this portion of the spectrum and when hams in that country will have access to the spectrum.

RAC Bulletin 2012-012E - ARES reflector address changes

To more accurately correspond to the names we use for our reflectors, the following changes are announced effective immediately. Thanks to Neil Herber, VE3PUE for his efforts on our behalf.

- ares_alerts@eton.ca *remains the same*
- ares_sec_dec_ec@eton.ca is changed to ares_chat@eton.ca
- racamberalert@eton.ca is changed to aran_on@eton.ca
- racamberalertbc@eton.ca is changed to aran_bc@eton.ca

Please note that Neil has created aliases so that the "old" addresses will work until everyone is changed over.

Earle Smith, VE6NM - SK

It is with regret that Radio Amateurs of Canada has learned that Earle Smith, VE6NM, a RAC past President, passed away peacefully after an illness on Friday, February 24th.



Earle had served as President of RAC from late 2004 to the end of 2007 and was well respected by amateur radio operators both within Canada and Internationally. He was a gentleman and friend to all hams and a strong advocate for amateur radio and for the Radio Amateurs of Canada.

All who knew Earle respected him as a leader, a friend and a force for good in the amateur radio community. We will miss him.

The amateur community can post condolences which will be forwarded to the family at earlesmith.rac.ca.

Did you know that the RAC publication TCA is now available to members digitally on their website?

The SARC Calendar ...all about the Amateur Radio month ahead in Surrey

March 2012						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>For details on all SARC events, go to ve7sar.net</p> <p>For details on all SEPARS events, go to separs.net</p>				1 Ham Class	2  Weekly SARC Breakfast 8:30	3 Contest: ARRL Int'l DX Contest
4 Contest: ARRL Int'l DX Contest	5 	6 SEPAR NET 7:30 SARC NET 8:00	7 SARC Meeting 7:00	8  Ham Class	9 Weekly SARC Breakfast 8:30	10 Contest: EA Sprint PSK31
11 Contest: North American Sprint, RTTY	12	13 SEPAR NET 7:30 SARC NET 8:00	14 SARC Meeting	15 Ham Class	16 Weekly SARC Breakfast 8:30	17 Contest: BARTG HF RTTY
18 Contest: BARG HF RTTY	19	20 SEPAR NET 7:30 SARC NET 8:00	21 SARC Exec Mtg. 7:00	22 Ham Class	23 Weekly SARC Breakfast 8:30	24 Contest: CQ WW WPX Contest, SSB
25 Contest: CQ WW WPX Contest, SSB	26	27 SEPAR NET 7:30 SARC NET 8:00	28	29	30 Weekly SARC Breakfast 8:30	31

Contest Details: <http://hornucopia.com/contestcal/contestcal.html>



QRT John Brodie VA7XB

Director Vacancies

SARC currently has two vacancies on its Board of Directors. In mid February, Gary Skett VE7AS resigned from the Board in order to pursue other interests, therefore after the current ham class has been completed in March, Gary will not be teaching ham classes or organizing meeting presentations on behalf of SARC. The Executive is hoping that other members will step forward to take up these important duties and has expressed a desire to fill the Director vacancies on a temporary basis, with positions to be confirmed by election at the next Annual General Meeting in June. If you are personally approached by a member of the Executive, and asked whether you have the interest and desire to be a Director - temporary or otherwise - please consider the request a compliment that reflects your demonstrated ability and interest in club activities. Only by filling the ranks of the Executive and Board with capable and enthusiastic members can we continue to grow the club and promote amateur radio to the benefit of the membership.

Repeater Update

It seems that we have been talking forever about the proposed repeater relocation and, in fact, we started this project at least 2 years ago. Now there's reason for optimism that it will happen soon. Two members of the Executive met with Surrey Fire Services last week and they indicated that the last significant obstacle has been removed. That obstacle was the substantial cost of the antenna installation, a cost which has escalated significantly since the last estimate a year ago. Apparently the funds have now been found to do the job, and the contractor has been selected. We are told that all that remains before installation commences is for Surrey to review the Strata agreement for building residents to ensure there are no "RF unfriendly" clauses that might conflict with the lease between the City and the building owner. Assuming there are none, installation should proceed shortly. The equipment is all in hand, tuned up by Steve Coleman VE7MAN and Dave Cameron VE7LTD, and ready to go. Antennas are also ready, giving us 2m and 440 MHz capability immediately, including IRLP and Echolink. The existing repeater will remain in service, at least temporarily, and will be linked to the new installation. A 220 MHz antenna will also be installed, but capability on that band will await acquisition of a suitable repeater.

Surrey Community Grant

SARC has been awarded a \$500 grant by the City of Surrey towards its Field Day exercise to be held at the end of June 2012. We are very grateful to the City for its on-going support for the second year in a row, as Field Day expenses normally run a deficit. The grant is allocated to food, fuel and rentals.

Swap Meet or Not?

At the last general meeting, I announced that your Executive is recommending the club not hold a flea market/swap meet this year. There are several reasons for this recommendation:

- 1) traditionally we have held the swap meet in August, a month when it is difficult to sell tables and attract buyers because of holiday conflicts;
- 2) detailed planning is required during the summer months when we might wish a break from club duties and, most importantly;
- 3) there may be a better opportunity for fund raising. You will hear more about this in coming months, but our partner club, LARA, has invited us to join them in selling raffle tickets at the "Cruise-in" event in Langley to be held in September. LARA has applied to have a table at the "Cruise-in" which attracts thousands of visitors, providing an ideal opportunity for fund raising. If the application is successful, we will proceed with an officially-approved Lottery and secure some attractive prizes.

